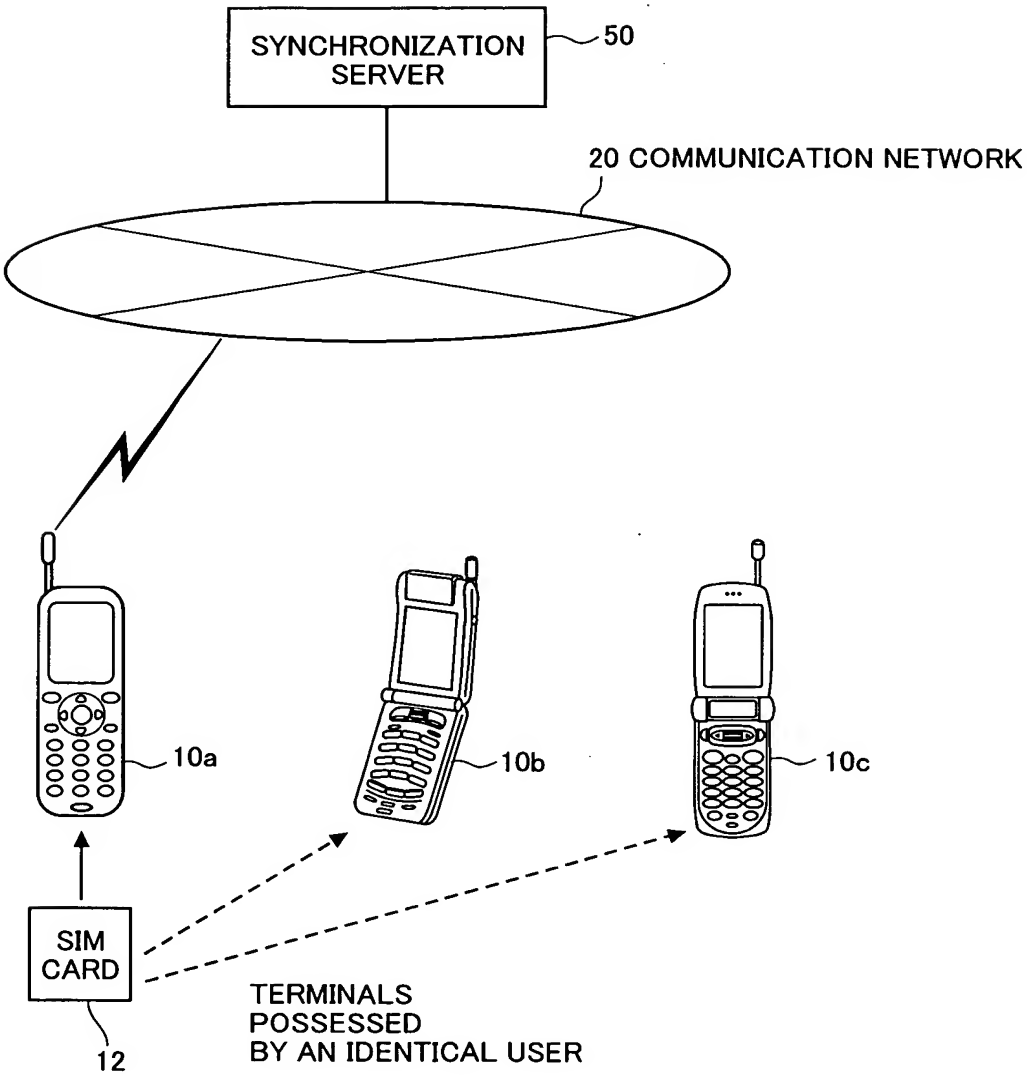
SYNCHRONIZATION SERVER
50
20 COMMUNICATION NETWORK
10a
10b
10c
SIM CARD
12
TERMINALS POSSESSED BY AN IDENTICAL USER

FIG. 1

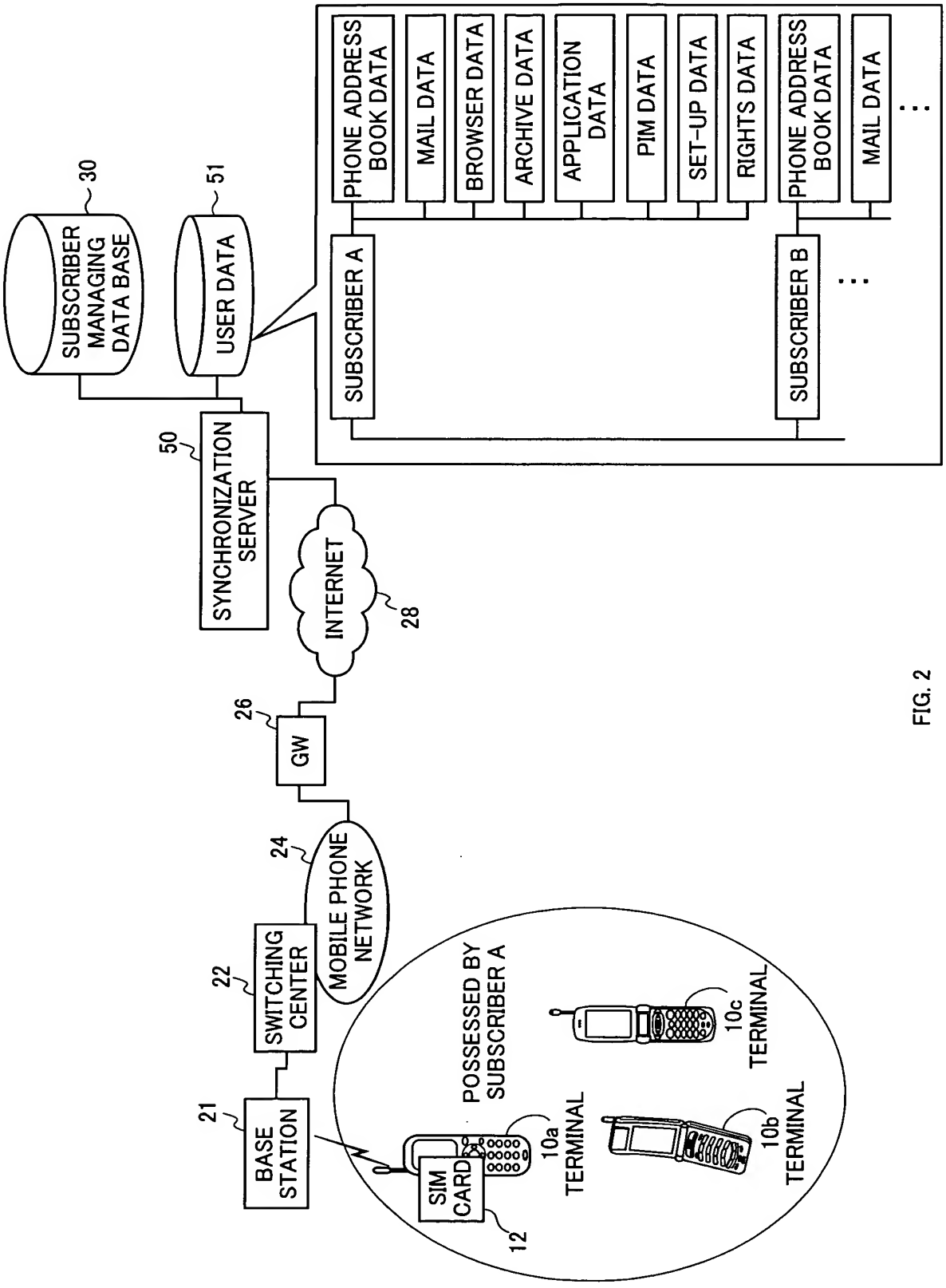
30
SUBSCRIBER MANAGING DATA BASE
51
USER DATA
PHONE ADDRESS BOOK DATA
MAIL DATA
BROWSER DATA
ARCHIVE DATA
APPLICATION DATA
PIM DATA
SET-UP DATA
RIGHTS DATA
PHONE ADDRESS BOOK DATA
MAIL DATA
SUBSCRIBER A
SUBSCRIBER B
50
SYNCHRONIZATION SERVER
INTERNET
28
26
GW
24
MOBILE PHONE NETWORK
22
SWITCHING CENTER
21
BASE STATION
POSSESSED BY SUBSCRIBER A
10c TERMINAL
10a TERMINAL
10b TERMINAL
SIM CARD
12

FIG. 2

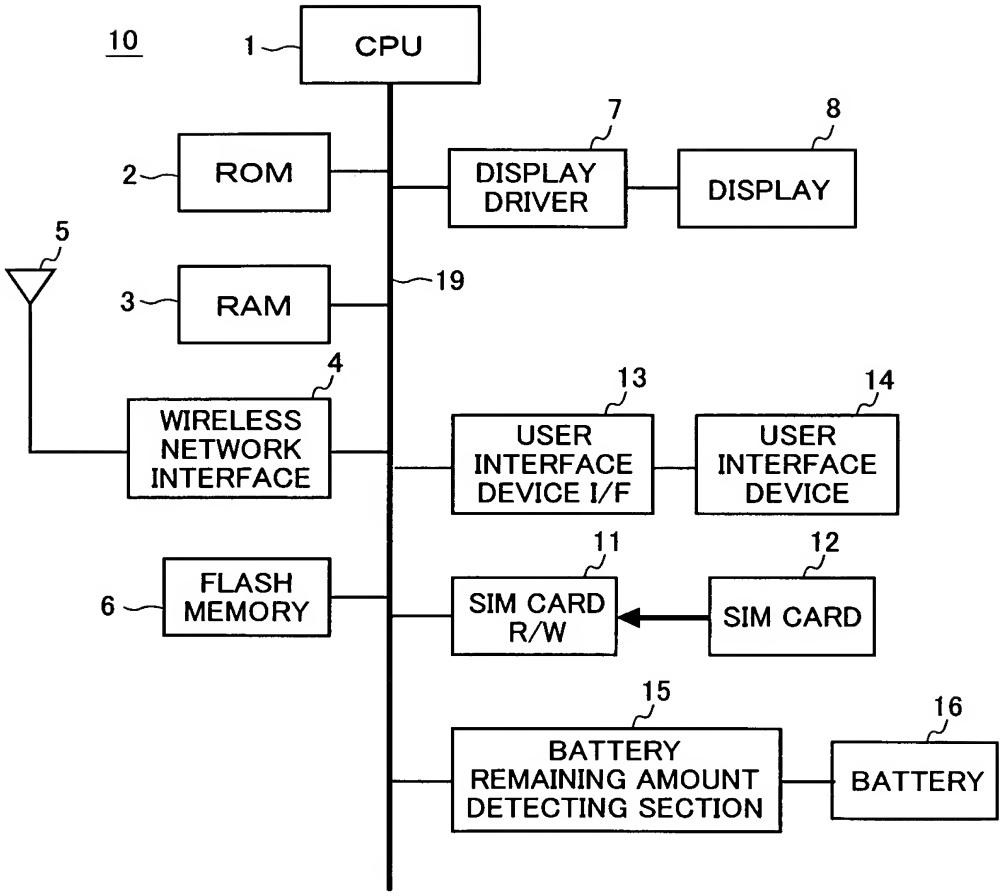
10
1
CPU
2
ROM
7
DISPLAY DRIVER
8
DISPLAY
5
3
RAM
19
4
WIRELESS NETWORK INTERFACE
13
USER INTERFACE DEVICE I/F
14
USER INTERFACE DEVICE
11
12
6
FLASH MEMORY
SIM CARD R/W
SIM CARD
15
16
BATTERY REMAINING AMOUNT DETECTING SECTION
BATTERY

FIG. 3

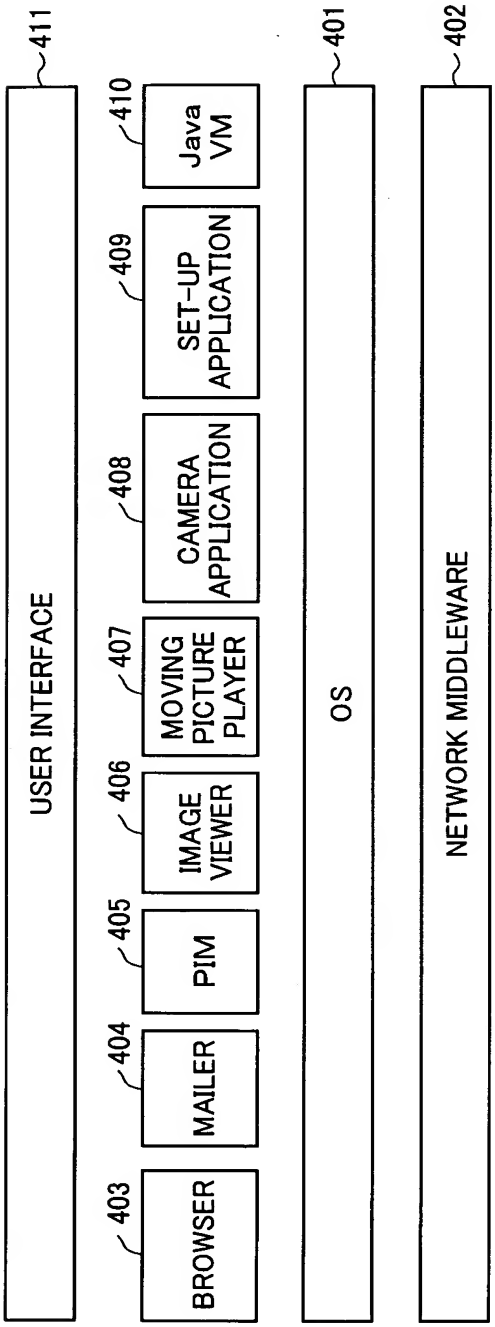
411
USER INTERFACE
403
BROWSER
404
MAILER
405
PIM
406
IMAGE VIEWER
407
MOVING PICTURE PLAYER
408
CAMERA APPLICATION
409
SET-UP APPLICATION
410
Java VM
401
OS
402
NETWORK MIDDLEWARE

FIG. 4

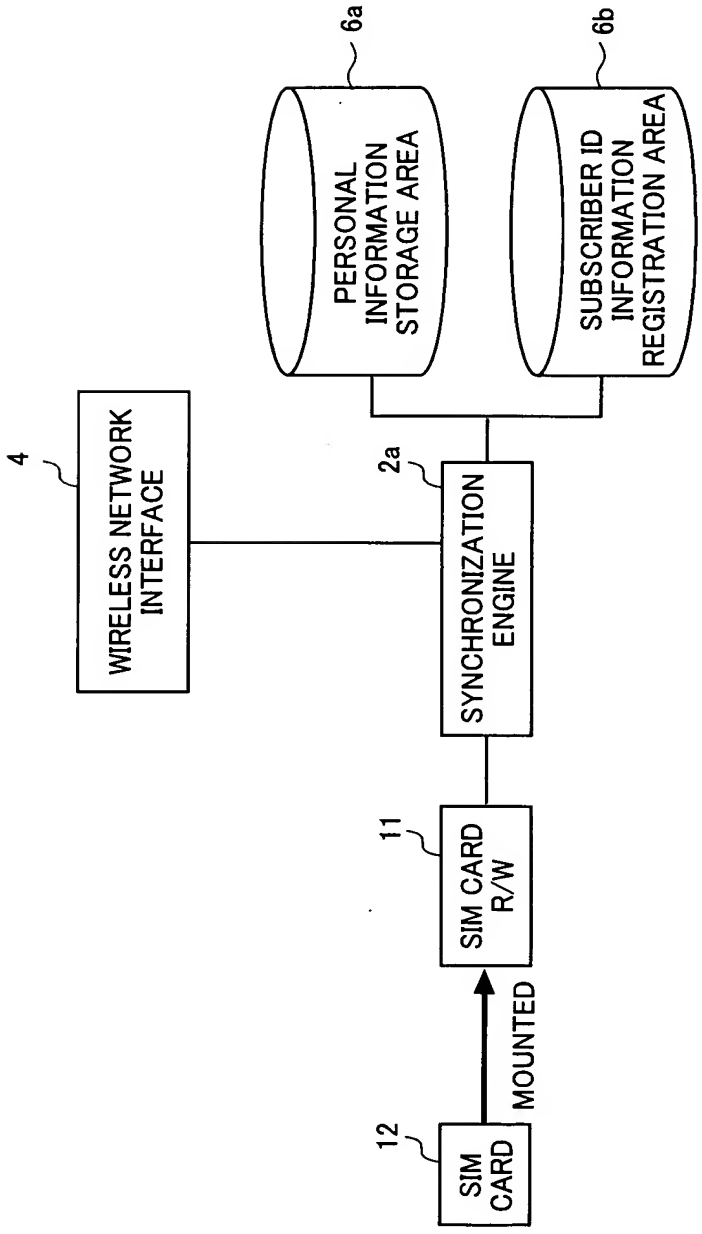
6a
6b
PERSONAL INFORMATION STORAGE AREA
SUBSCRIBER ID INFORMATION REGISTRATION AREA
4
WIRELESS NETWORK INTERFACE
2a
SYNCHRONIZATION ENGINE
11
SIM CARD R/W
MOUNTED
12
SIM CARD

FIG. 5

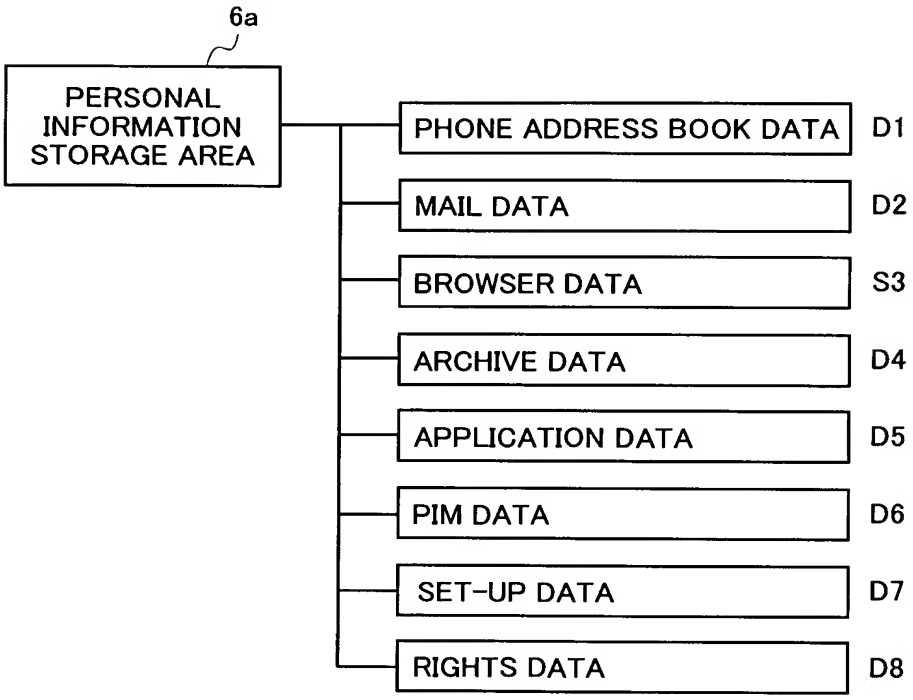
6a
PERSONAL INFORMATION STORAGE AREA
PHONE ADDRESS BOOK DATA
D1
MAIL DATA
D2
BROWSER DATA
S3
ARCHIVE DATA
D4
APPLICATION DATA
D5
PIM DATA
D6
SET-UP DATA
D7
RIGHTS DATA
D8

FIG. 6

FIG. 7(a)

SUBSCRIBER MANAGING DB 30

SUBSCRIBER ID	TERMINAL ID	TERMINAL PASSWORD
SUBSCRIBER IDa	TERMINAL IDa1 TERMINAL IDa2 TERMINAL IDa3	PASSWORDa1 PASSWORDa2 PASSWORDa3
SUBSCRIBER IDb	TERMINAL IDb1 TERMINAL IDb2	PASSWORDb1 PASSWORDb2
⋮	⋮	⋮

FIG. 7(b)

SUBSCRIBER MANAGING DB 30'

SUBSCRIBER ID	TERMINAL ID	TERMINAL PASSWORD	SYNCHRONIZATION TARGET DATA
SUBSCRIBER IDa	TERMINAL IDa1 TERMINAL IDa2 TERMINAL IDa3	PASSWORDa1 PASSWORDa2 PASSWORDa3	D1–D8 D1–D6, D8 D1–D3, D6, D7
SUBSCRIBER IDb	TERMINAL IDb1 TERMINAL IDb2	PASSWORDb1 PASSWORDb2	D1–D8 D1–D3, D6
⋮	⋮	⋮	⋮

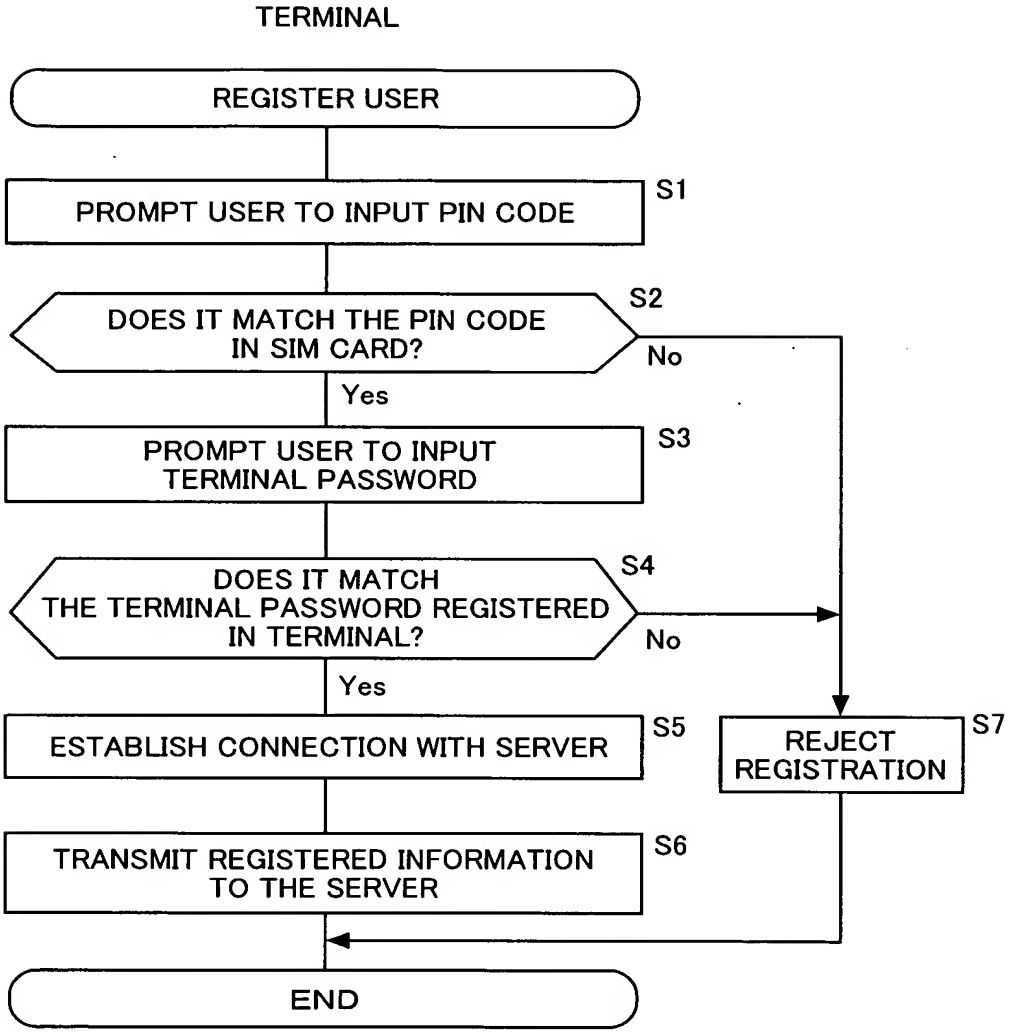
TERMINAL
REGISTER USER
PROMPT USER TO INPUT PIN CODE
S1
DOES IT MATCH THE PIN CODE IN SIM CARD?
S2
No
Yes
PROMPT USER TO INPUT TERMINAL PASSWORD
S3
DOES IT MATCH THE TERMINAL PASSWORD REGISTERED IN TERMINAL?
S4
No
Yes
ESTABLISH CONNECTION WITH SERVER
S5
REJECT REGISTRATION
S7
TRANSMIT REGISTERED INFORMATION TO THE SERVER
S6
END

FIG. 8

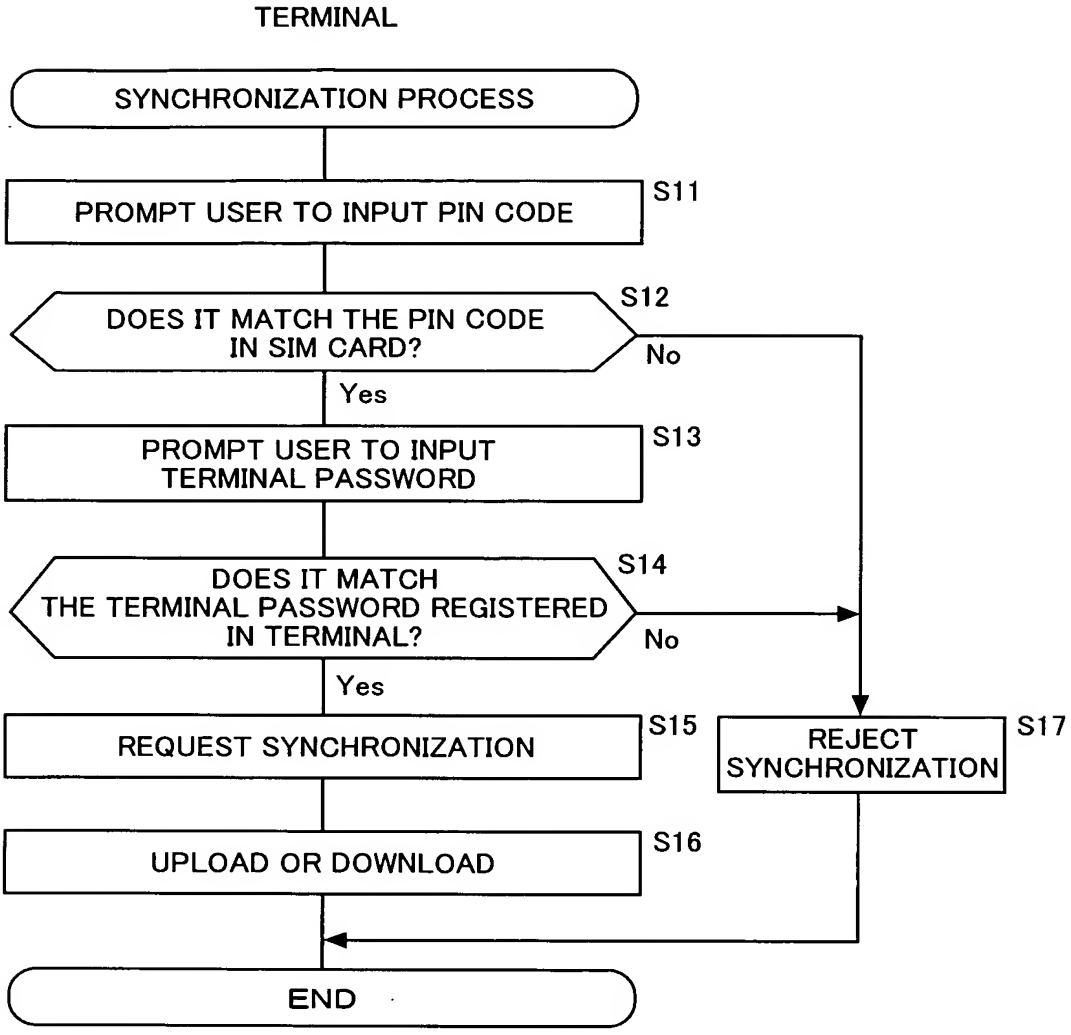
TERMINAL
SYNCHRONIZATION PROCESS
PROMPT USER TO INPUT PIN CODE
S11
DOES IT MATCH THE PIN CODE IN SIM CARD?
S12
No
Yes
PROMPT USER TO INPUT TERMINAL PASSWORD
S13
DOES IT MATCH THE TERMINAL PASSWORD REGISTERED IN TERMINAL?
S14
No
Yes
REQUEST SYNCHRONIZATION
S15
REJECT SYNCHRONIZATION
S17
UPLOAD OR DOWNLOAD
S16
END

FIG. 9

TERMINAL

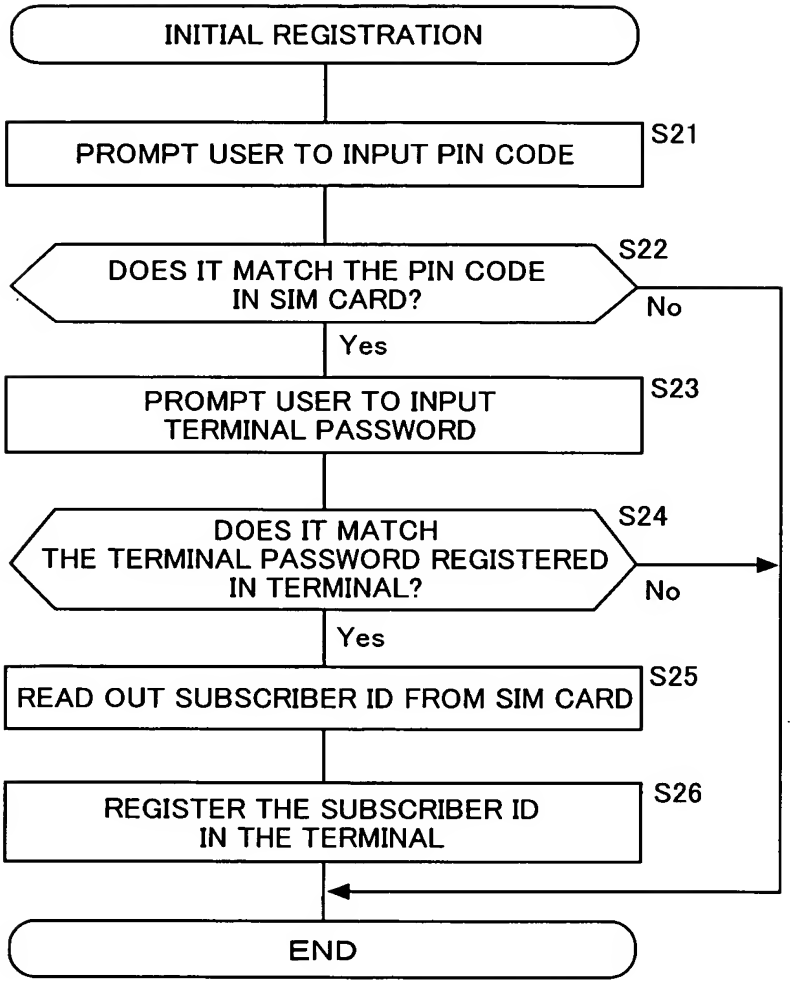

FIG. 10-A

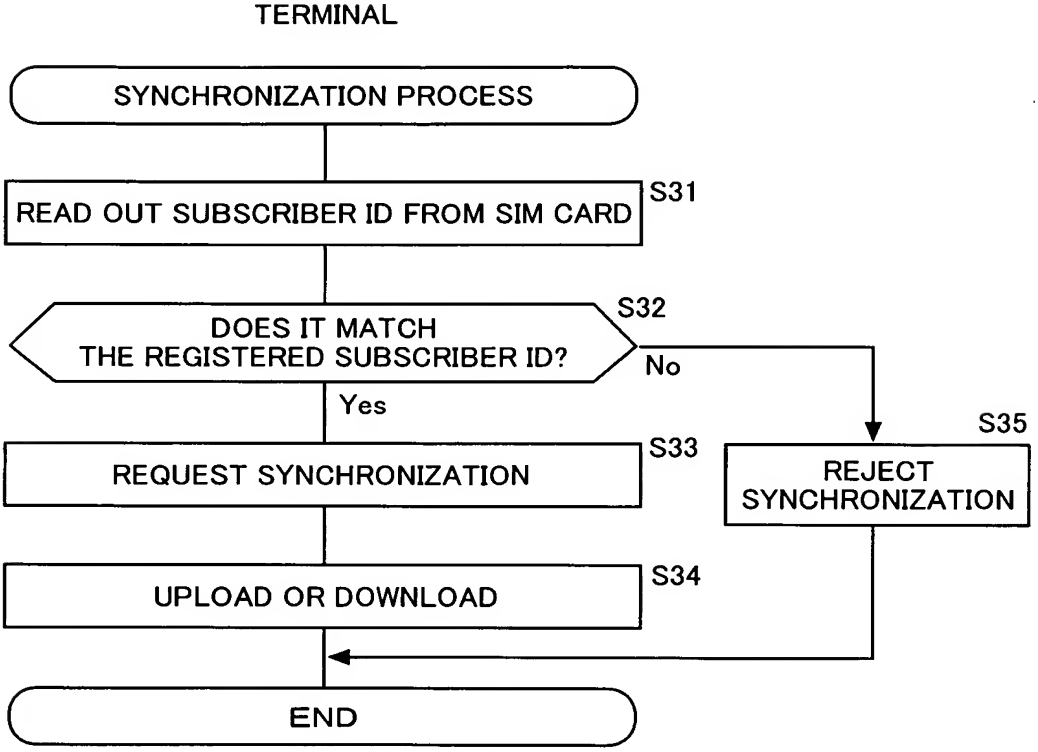
TERMINAL
SYNCHRONIZATION PROCESS
READ OUT SUBSCRIBER ID FROM SIM CARD
S31
DOES IT MATCH THE REGISTERED SUBSCRIBER ID?
S32
No
Yes
REQUEST SYNCHRONIZATION
S33
REJECT SYNCHRONIZATION
S35
UPLOAD OR DOWNLOAD
S34
END

FIG. 10-B

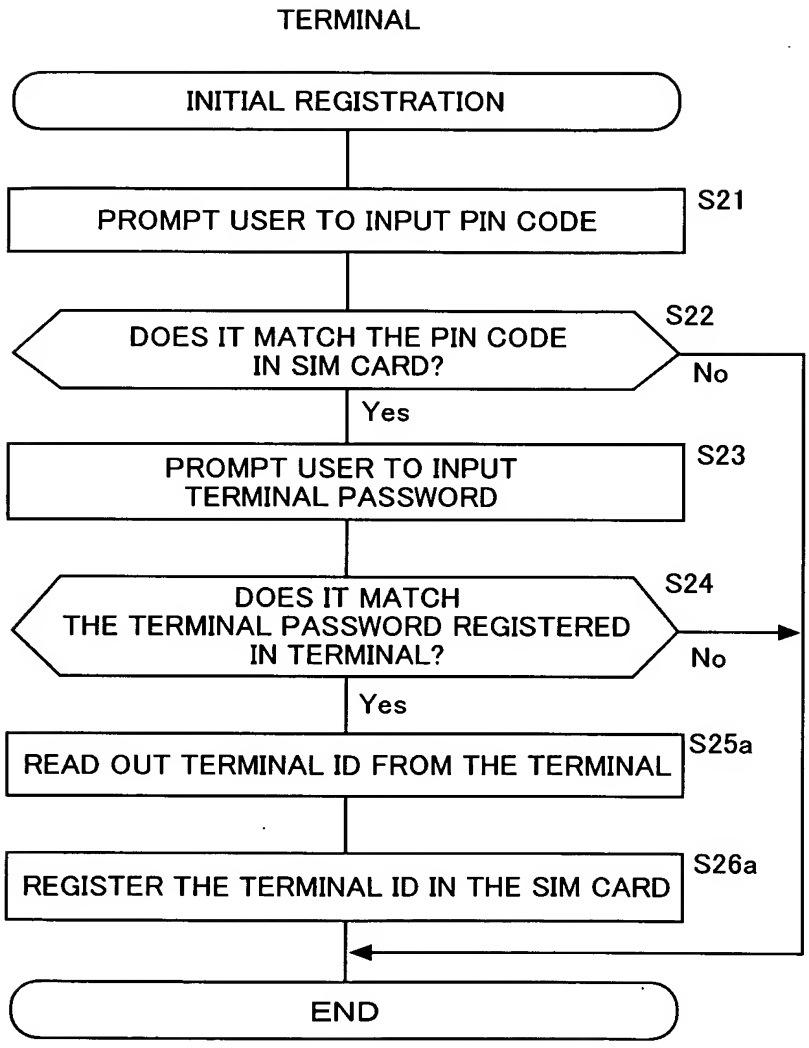
TERMINAL
INITIAL REGISTRATION
PROMPT USER TO INPUT PIN CODE
S21
DOES IT MATCH THE PIN CODE IN SIM CARD?
S22
No
Yes
PROMPT USER TO INPUT TERMINAL PASSWORD
S23
DOES IT MATCH THE TERMINAL PASSWORD REGISTERED IN TERMINAL?
S24
No
Yes
READ OUT TERMINAL ID FROM THE TERMINAL
S25a
REGISTER THE TERMINAL ID IN THE SIM CARD
S26a
END

FIG. 11-A

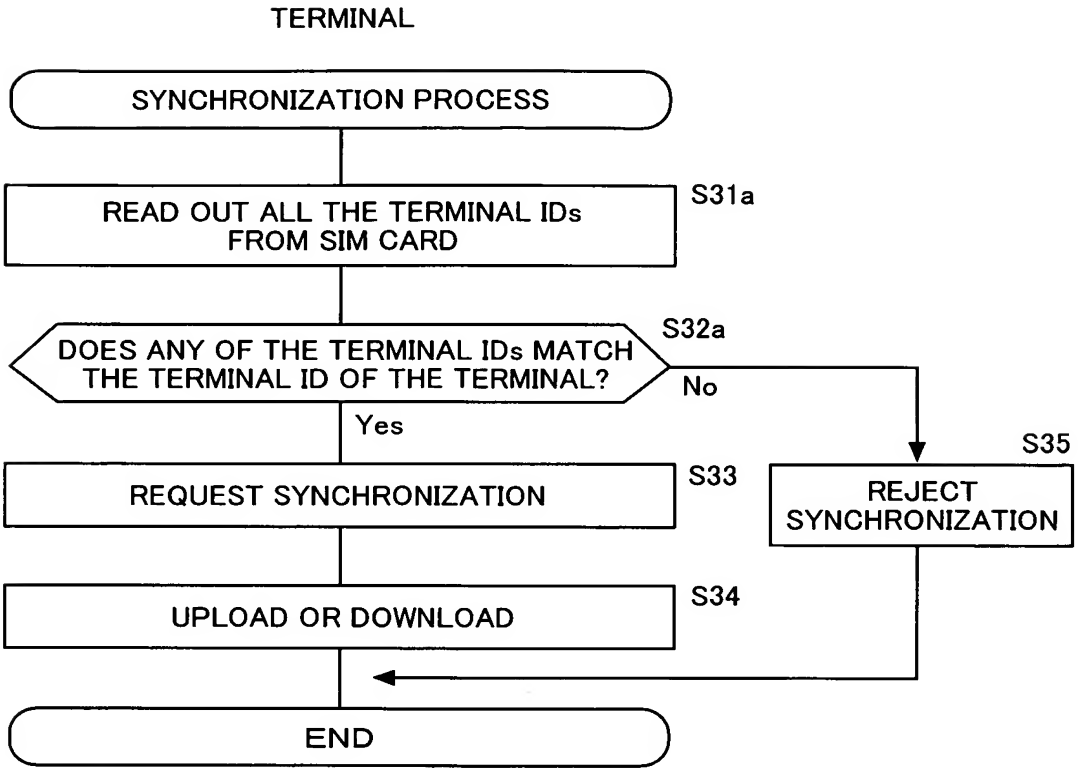
TERMINAL
SYNCHRONIZATION PROCESS
READ OUT ALL THE TERMINAL IDs FROM SIM CARD
S31a
DOES ANY OF THE TERMINAL IDs MATCH THE TERMINAL ID OF THE TERMINAL?
S32a
No
Yes
REQUEST SYNCHRONIZATION
S33
REJECT SYNCHRONIZATION
S35
UPLOAD OR DOWNLOAD
S34
END

FIG. 11-B

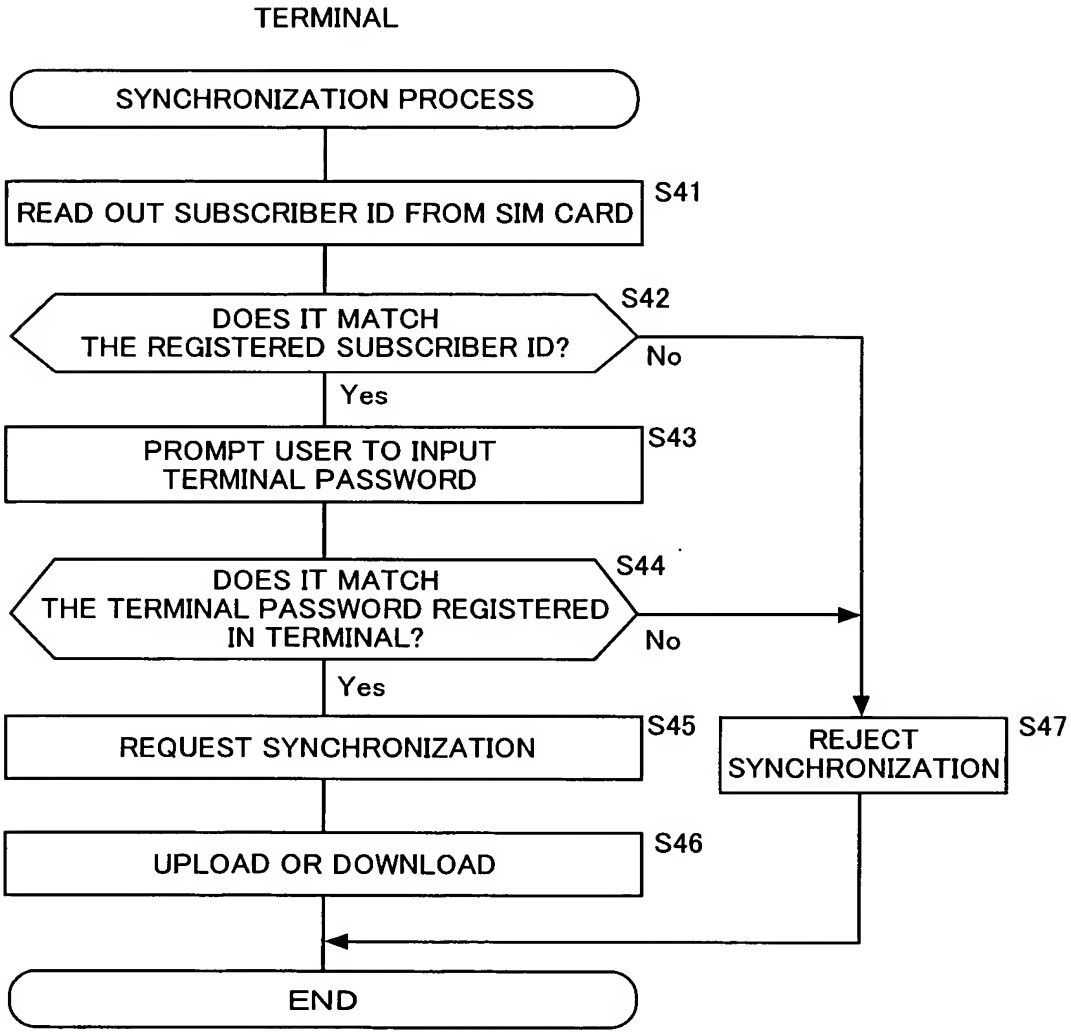
TERMINAL
SYNCHRONIZATION PROCESS
READ OUT SUBSCRIBER ID FROM SIM CARD
S41
DOES IT MATCH THE REGISTERED SUBSCRIBER ID?
S42
No
Yes
PROMPT USER TO INPUT TERMINAL PASSWORD
S43
DOES IT MATCH THE TERMINAL PASSWORD REGISTERED IN TERMINAL?
S44
No
Yes
REQUEST SYNCHRONIZATION
S45
REJECT SYNCHRONIZATION
S47
UPLOAD OR DOWNLOAD
S46
END

FIG. 12

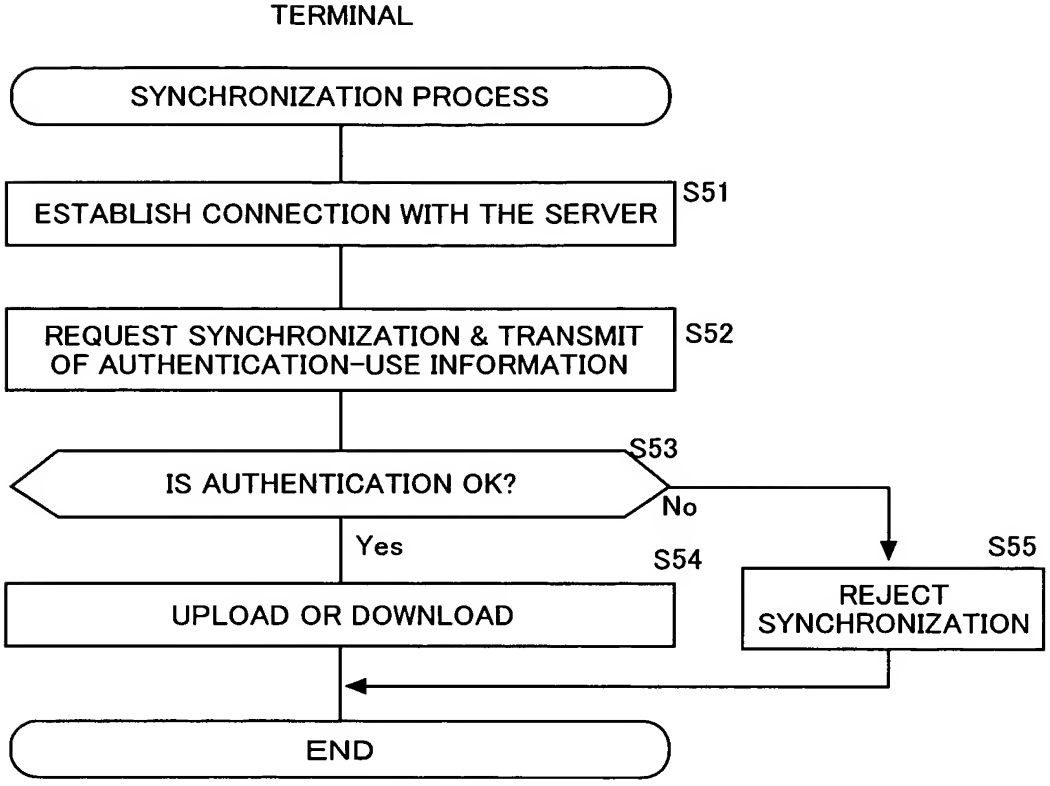
TERMINAL
SYNCHRONIZATION PROCESS
ESTABLISH CONNECTION WITH THE SERVER
S51
REQUEST SYNCHRONIZATION & TRANSMIT OF AUTHENTICATION-USE INFORMATION
S52
S53
IS AUTHENTICATION OK?
No
Yes
S54
UPLOAD OR DOWNLOAD
S55
REJECT SYNCHRONIZATION
END

FIG. 13

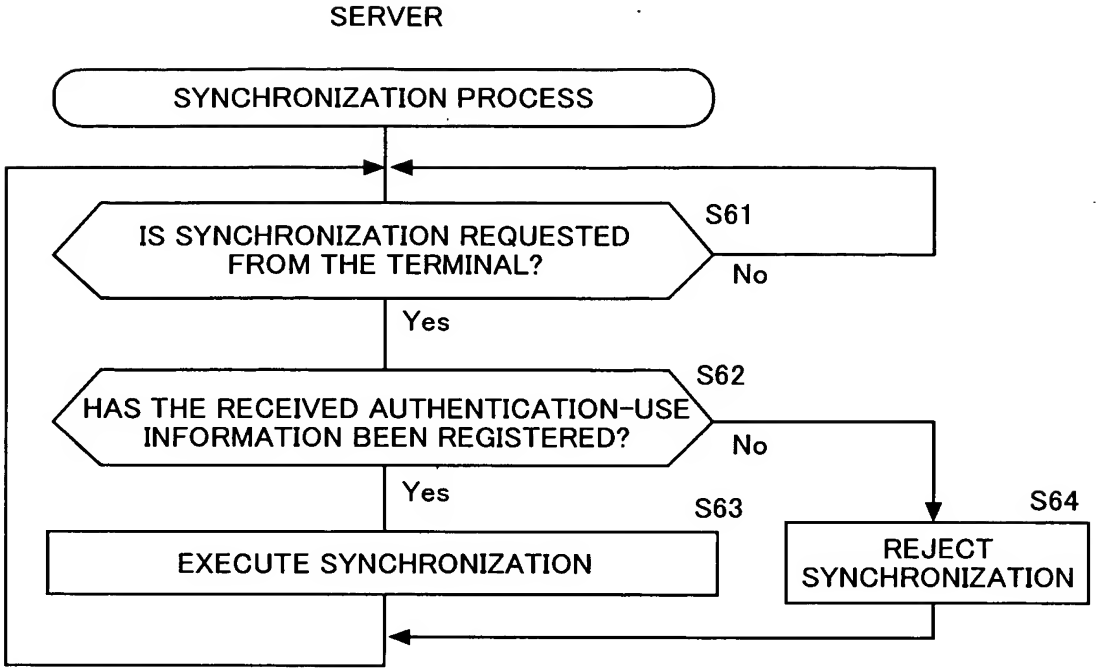
SERVER
SYNCHRONIZATION PROCESS
IS SYNCHRONIZATION REQUESTED FROM THE TERMINAL?
S61
No
Yes
HAS THE RECEIVED AUTHENTICATION-USE INFORMATION BEEN REGISTERED?
S62
No
Yes
S63
EXECUTE SYNCHRONIZATION
S64
REJECT SYNCHRONIZATION

FIG. 14

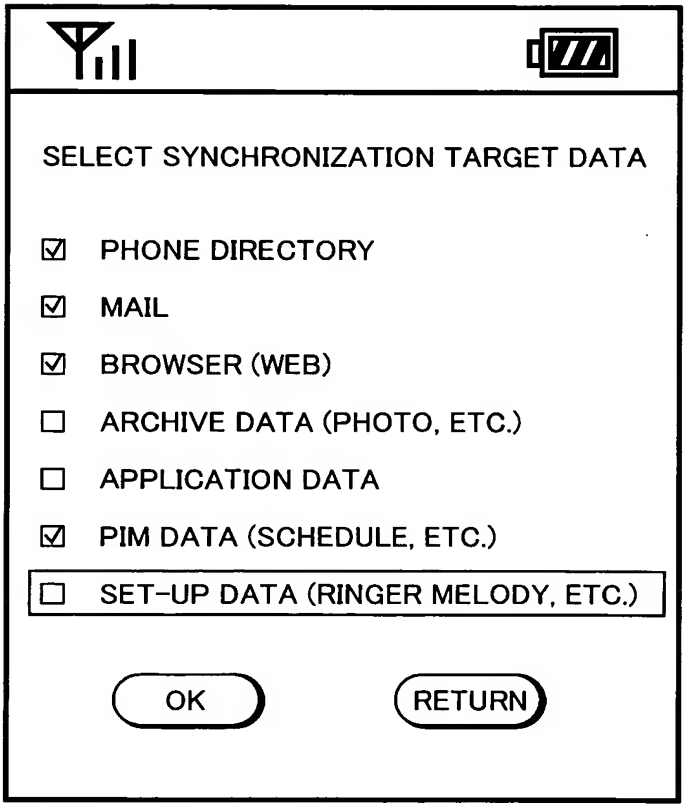
SELECT SYNCHRONIZATION TARGET DATA
PHONE DIRECTORY
MAIL
BROWSER (WEB)
ARCHIVE DATA (PHOTO, ETC.)
APPLICATION DATA
PIM DATA (SCHEDULE, ETC.)
SET-UP DATA (RINGER MELODY, ETC.)
OK
RETURN

FIG. 15

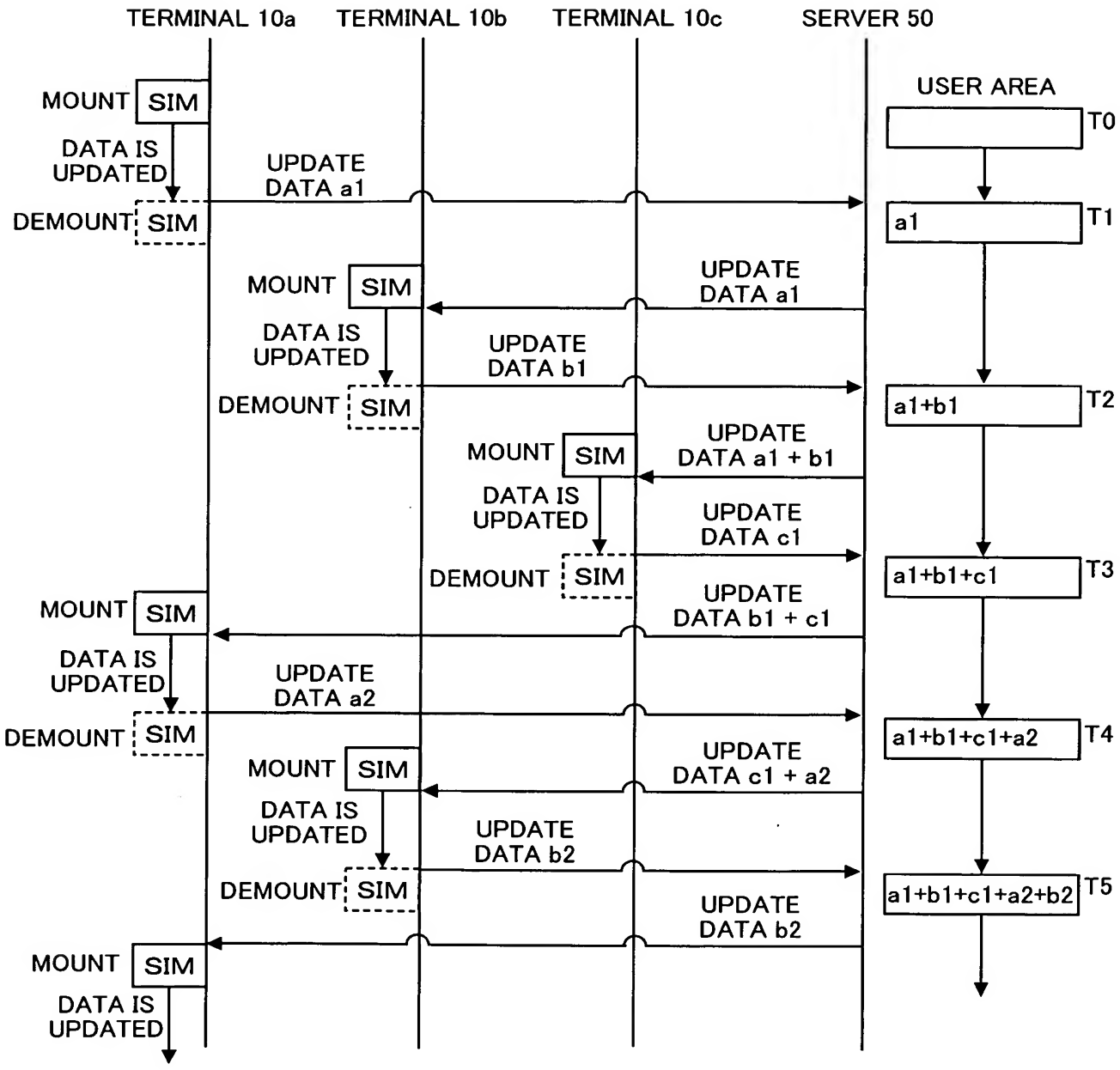
TERMINAL 10a
TERMINAL 10b
TERMINAL 10c
SERVER 50
USER AREA
MOUNT SIM
DATA IS UPDATED
UPDATE DATA a1
DEMOUNT SIM
T0
a1
T1
MOUNT SIM
UPDATE DATA a1
DATA IS UPDATED
UPDATE DATA b1
DEMOUNT SIM
a1+b1
T2
MOUNT SIM
UPDATE DATA a1 + b1
DATA IS UPDATED
UPDATE DATA c1
DEMOUNT SIM
a1+b1+c1
T3
MOUNT SIM
UPDATE DATA b1 + c1
DATA IS UPDATED
UPDATE DATA a2
DEMOUNT SIM
a1+b1+c1+a2
T4
MOUNT SIM
UPDATE DATA c1 + a2
DATA IS UPDATED
UPDATE DATA b2
DEMOUNT SIM
a1+b1+c1+a2+b2
T5
UPDATE DATA b2
MOUNT SIM
DATA IS UPDATED

FIG. 16

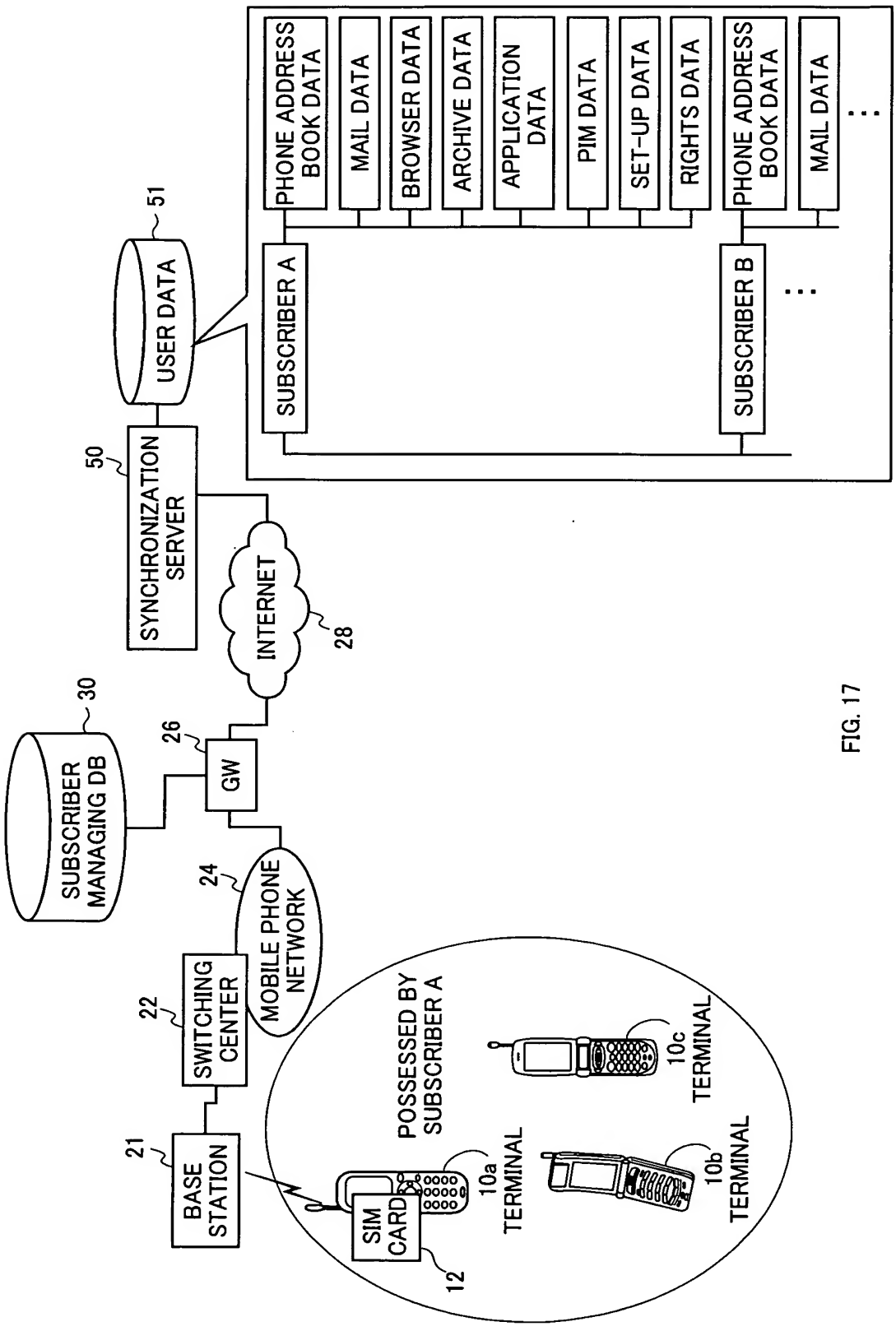
SUBSCRIBER MANAGING DB
30
BASE STATION
21
SWITCHING CENTER
22
MOBILE PHONE NETWORK
24
GW
26
INTERNET
28
SYNCHRONIZATION SERVER
50
USER DATA
51
SUBSCRIBER A
SUBSCRIBER B
PHONE ADDRESS BOOK DATA
MAIL DATA
BROWSER DATA
ARCHIVE DATA
APPLICATION DATA
PIM DATA
SET-UP DATA
RIGHTS DATA
PHONE ADDRESS BOOK DATA
MAIL DATA
POSSESSED BY SUBSCRIBER A
SIM CARD
12
10a TERMINAL
10b TERMINAL
10c TERMINAL

FIG. 17

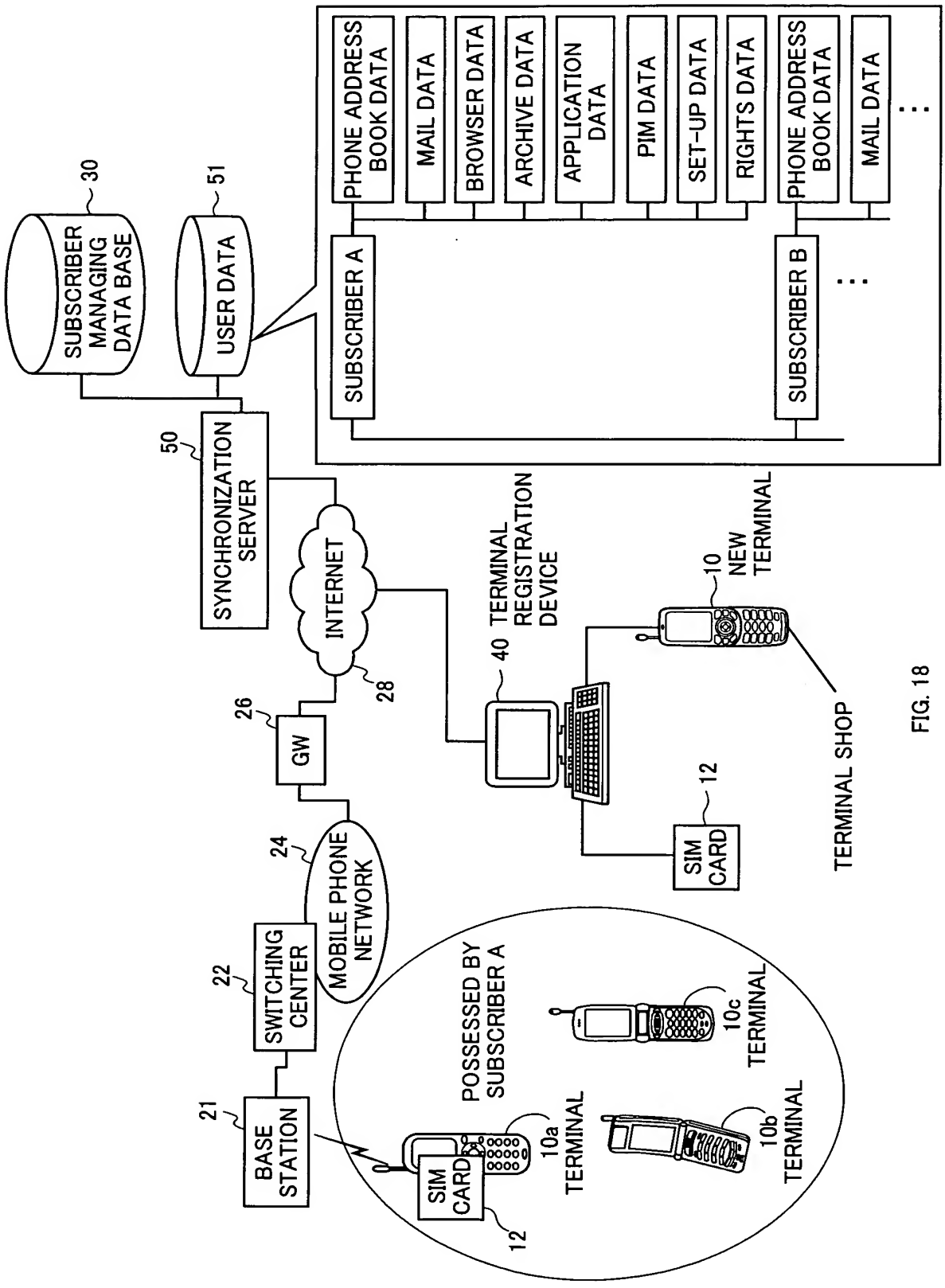
30
SUBSCRIBER MANAGING DATA BASE
51
USER DATA
PHONE ADDRESS BOOK DATA
MAIL DATA
BROWSER DATA
ARCHIVE DATA
APPLICATION DATA
PIM DATA
SET-UP DATA
RIGHTS DATA
PHONE ADDRESS BOOK DATA
MAIL DATA
SUBSCRIBER A
SUBSCRIBER B
50
SYNCHRONIZATION SERVER
INTERNET
28
40 TERMINAL REGISTRATION DEVICE
10 NEW TERMINAL
TERMINAL SHOP
26
GW
24
MOBILE PHONE NETWORK
22
SWITCHING CENTER
21
BASE STATION
SIM CARD
12
SIM CARD
12
POSSESSED BY SUBSCRIBER A
10a TERMINAL
10b TERMINAL
10c TERMINAL

FIG. 18

TERMINAL REGISTRATION DEVICE

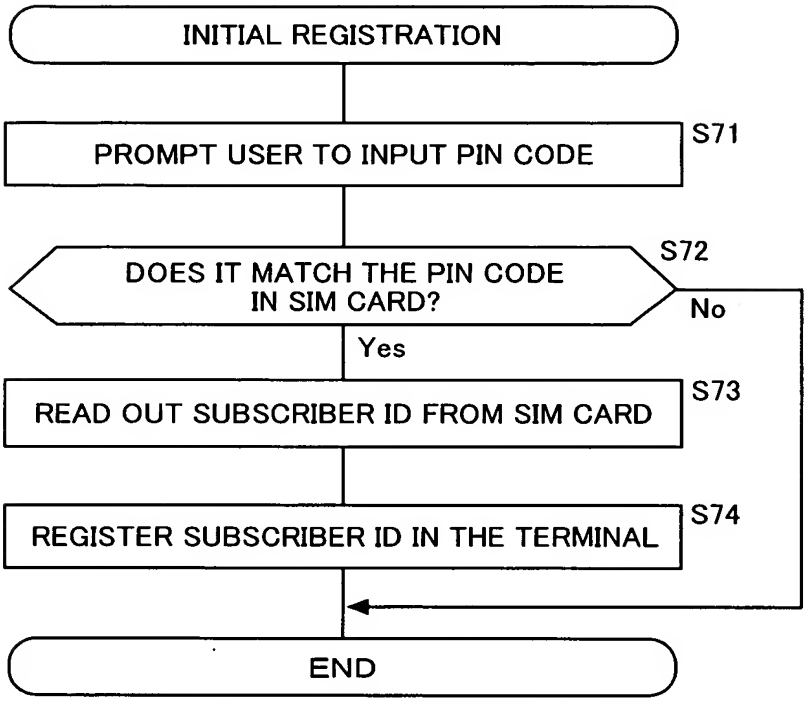

FIG. 19

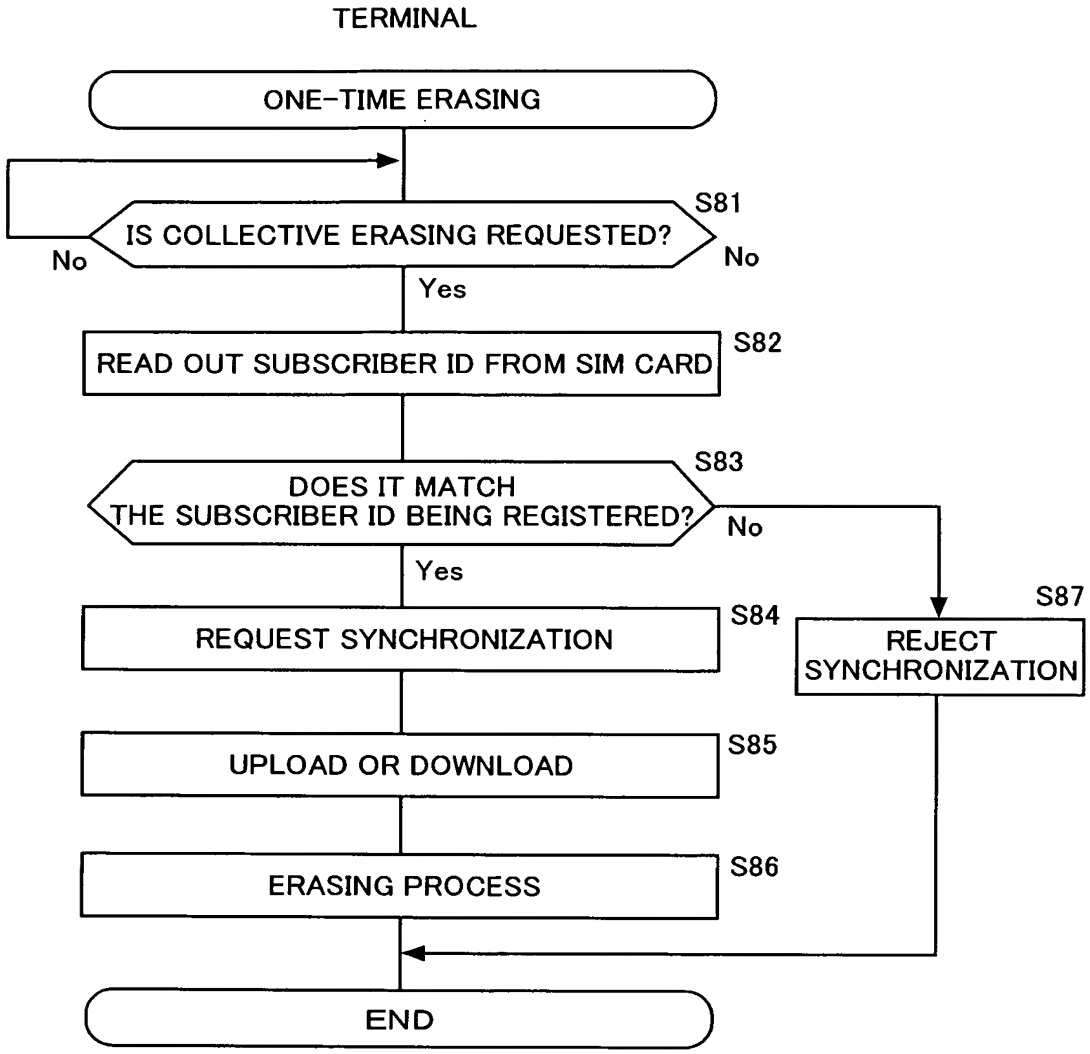
TERMINAL
ONE-TIME ERASING
S81
IS COLLECTIVE ERASING REQUESTED?
No
No
Yes
S82
READ OUT SUBSCRIBER ID FROM SIM CARD
S83
DOES IT MATCH THE SUBSCRIBER ID BEING REGISTERED?
No
Yes
S84
REQUEST SYNCHRONIZATION
S87
REJECT SYNCHRONIZATION
S85
UPLOAD OR DOWNLOAD
S86
ERASING PROCESS
END

FIG. 20

TERMINAL

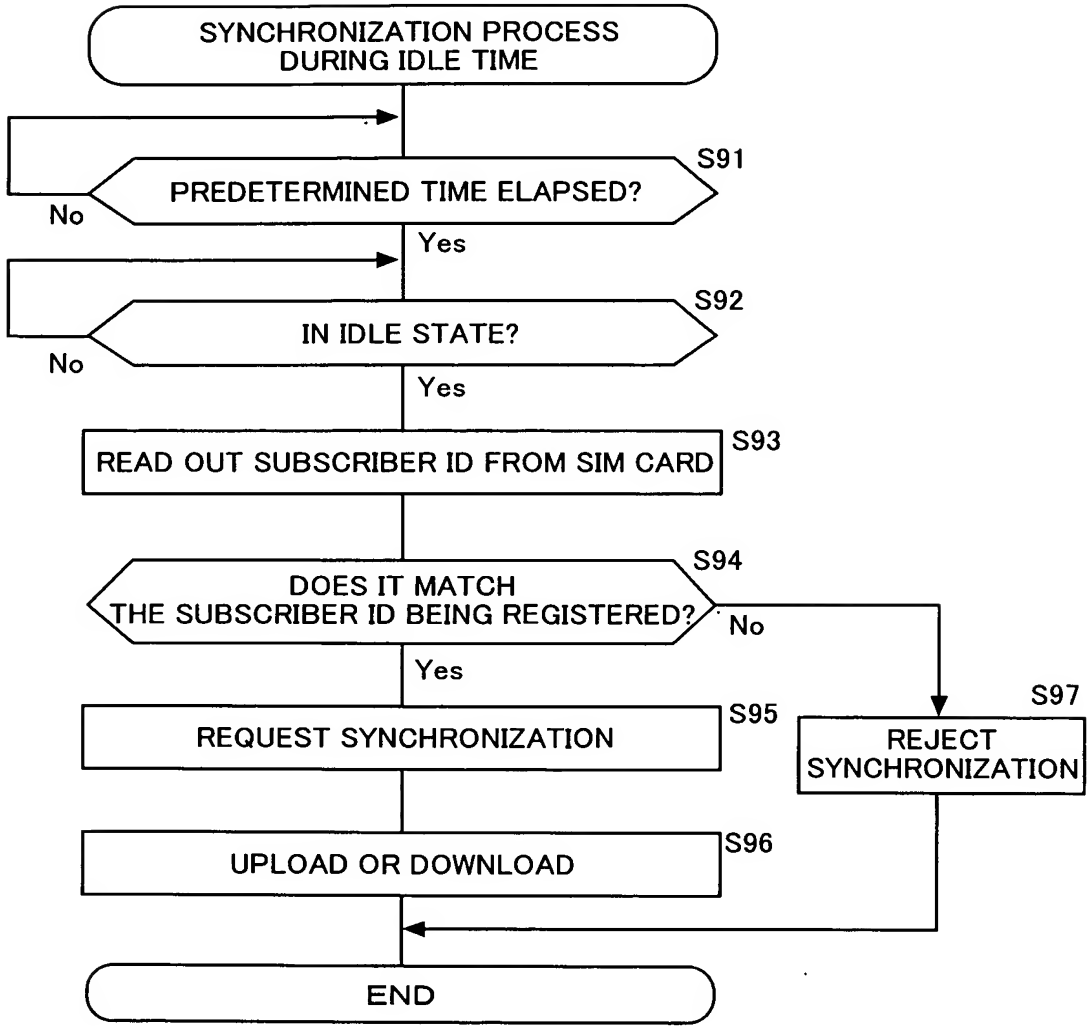

FIG. 21

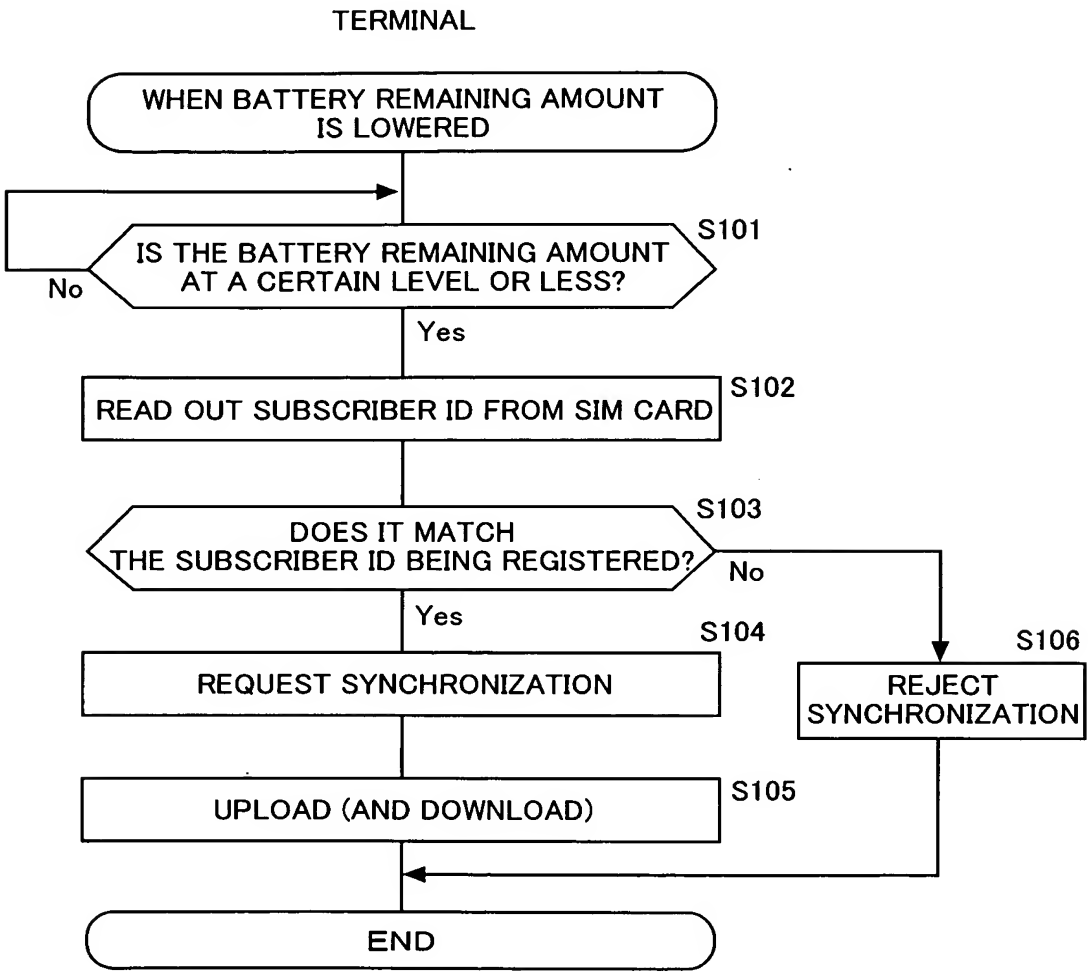
TERMINAL
WHEN BATTERY REMAINING AMOUNT IS LOWERED
S101
IS THE BATTERY REMAINING AMOUNT AT A CERTAIN LEVEL OR LESS?
No
Yes
S102
READ OUT SUBSCRIBER ID FROM SIM CARD
S103
DOES IT MATCH THE SUBSCRIBER ID BEING REGISTERED?
No
Yes
S104
REQUEST SYNCHRONIZATION
S106
REJECT SYNCHRONIZATION
S105
UPLOAD (AND DOWNLOAD)
END

FIG. 22